CLAIMS

What is claimed is:

1. A semiconductor Type Two phased locked loop filter having a passive capacitor part and an active resistor part; said active resistor part being integrated with the passive capacitor part.

2. The filter as in claim 1 wherein the active resistor is a standard FET device.

3. The filter as in claim 1 wherein the active resistor is continuously variable.

4. The filter as in claim 1 wherein the Type Two phased locked loop filter operates from a voltage and the active resistor part is controlled by a regulator circuit operating from a voltage that follows the type two phased locked loop voltage.

5. The filter as in claim 4 wherein the regulator circuit is bootstrapped to the phased locked loop voltage using a voltage follower configured op-amp.

6. The filter as in claim 4 wherein the phased locked loop filter has a current and regulator circuit comprising

a current source and a voltage source wherein the current source is tied to the phased locked loop filter current and the voltage source is used to tune the active resistor.

7. The filter as in claim 4 wherein the phased locked loop filter has a current and regulator circuit comprising a current source and a voltage source wherein the voltage source is tied to the phased locked loop voltage and the current source is used to tune the active resistor.

8. The filter as in claim 1 wherein all the parts are made in the same CMOS manufacturing step.

9. A semiconductor phased locked loop system comprising:

a charge pump;

a voltage controller oscillator; and

a Type Two filter comprising a passive capacitor part and an active resistor part, said active resistor part being integrated with the passive capacitor part.

10. A method of manufacturing a semicondutor Type Two phased locked loop filter comprising:

providing a passive capacitor part and an active resistor part; said active resistor part being integrated with the passive capacitor part.

11. A method as claimed in claim 10 wherein all the parts are made in the same CMOS manufacturing step whereby no special steps for including passive resistor components is required.